

Message Text

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TO AMEMBASSY MANAGUA

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E.O. 11652: N/A

TAGS: TGEN NU

SUBJECT: 1972 EARTHQUAKE

REF: MANAGUA 3328

USGS HAS PROVIDED FOLLOWING STATEMENT RELATIVE TO REQUEST
INREFTTEL.

QUOTE: SYSTEMATIC STUDIES OF THE OCCURRENCE OF GREAT EARTH-
QUAKES IN THE WORLD'S MAJOR SEISMIC ZONES HAVE SHOWN THAT
THE PORTIONS OF THOSE ZONES THAT HAVE ESCAPED A GREAT
EARTHQUAKE FOR THE LONGEST TIME ARE THE MOST PROBABLE SITES
FOR THE NEXT GREAT EARTHQUAKE. THIS OBSERVATION IS READILY
EXPLAINED IN TERMS OF MODERN PLATE TECTONICS MODELS OF
GLOBAL GEOLOGIC PROCESSES AND HAS LED TO THE "SEISMIC
GAP" METHOD FOR PREDICTING THE LOCATIONS AND APPROXIMATE
SEQUENCE OF OCCURRENCE, BUT NOT THE TIMES, OF FUTURE GREAT
EARTHQUAKES.

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THE PACIFIC COAST OF EL SALVADOR AND THE NORTHERN HALF OF
NICARAGUA HAS BEEN IDENTIFIED AS SUCH A SEISMIC GAP
(KELLEHER, ET AL., 1973; MCCANN, ET AL., 1978 PLUS FIG.6).
THE NICARAGUA SEISMIC GAP IS LIMITED ON THE SOUTHEAST BY

THE SOURCE REGION OF THE 1956 QUAKE (M 7.1 OPPOSITE
SOUTHERN NICARAGUA) AND ON THE NORTHWEST BY THE SOURCE

REGION OF THE 1942 EARTHQUAKE (M 8.3 OPPOSITE SOUTHERN GUATEMALA). THE MOST RECENT LARGE EARTHQUAKES THAT MAY HAVE BEEN WITHIN THE GAP OCCURRED IN 1916 (M 7.5), 1921 (M 7.3), AND 1926 (M 7.1).

1. THE EXISTENCE OF THE NICARAGUA SEISMIC GAP STRONGLY SUGGESTS THAT THE SUBDUCTING PLATE BOUNDARY ALONG NICARAGUA'S WESTERN SHORELINE WILL PRODUCE ONE OR MORE LARGE EARTHQUAKES (M 7.0) IN THE NEXT FEW DECADES.

2. THE NICARAGUA SEISMIC NETWORK, ESTABLISHED AND OPERATED BY THE G.O.N. (WITH TECHNICAL ADVICE FROM THE USGS) AFTER THE DESTRUCTIVE 1972 MANAGUA EARTHQUAKE, PROVIDES UNUSUALLY DETAILED CURRENT INFORMATION ON EARTHQUAKES OCCURRING ALONG THE SUBDUCTING PLATE BOUNDARY AND ASSOCIATED ON-SHORE VOLCANIC ARC.

3. THE SEISMIC GAP ALONG NICARAGUA'S PACIFIC COAST IS FURTHER DEFINED BY THE NEAR ABSENCE FOR TWO DECADES OF EARTHQUAKES LARGER THAN M 6 , BUT DETAILED STUDIES BY THE NICARAGUA SEISMIC NETWORK REVEAL THAT SMALL-TO-MODERATE EARTHQUAKES (M 5) OCCUR FREQUENTLY THROUGHOUT THE CENTRAL AREA OF THE GAP.

4. THESE FREQUENT SMALLER SHOCKS PROBABLY ARE RELATED TO THE "RELOADING" OF THE PLATE BOUNDARY IN PREPARATION
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FOR THE NEXT GREAT EARTHQUAKE, AND THEIR PATTERN OF OCCURRENCE IN SPACE AND TIME MAY CONTAIN INFORMATION NEEDED TO PREDICT THE TIME OF OCCURRENCE OF THAT EVENT; BUT THE PRESENT STATE-OF-THE-ART IN EARTHQUAKE PREDICITON STUDIES DOES NOT PROVIDE AN ADEQUATE BASIS FOR INTERPRETING THE PATTERN OF SMALLER EARTHQUAKES IN THIS MANNER.

5. AS DETAILED STUDIES OF THE BACKGROUND SEISMICITY IN SEISMIC GAPS CONTINUES IN NICARAGUA AND IN SIMILARLY INSTRUMENTED REGIONS ELSEWHERE (SOUTHERN ALASKA, ALEUTIAN ISLANDS, KURILE-KAMCHATKA REGION, JAPAN) THERE IS A POSSITILITY THAT THE SEARCH FOR METHODS FOR PREDICTING GREAT EARTHQUAKES IN SEISMIC GAPS, ON THE BASIS OF THEIR BACKGROUND SEISMICITY, WILL SUCCEED. AT PRESENT THIS CAPABILITY DOES NOT EXIST. UNQUOTE. VANCE

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